

Advanced Projects in Exoplanets

The RM Effect

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Transiting Exoplanets

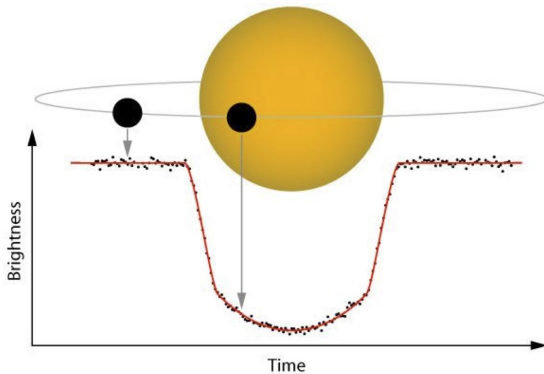


Figure: Credit ESO

Rossiter-McLaughlin Effect

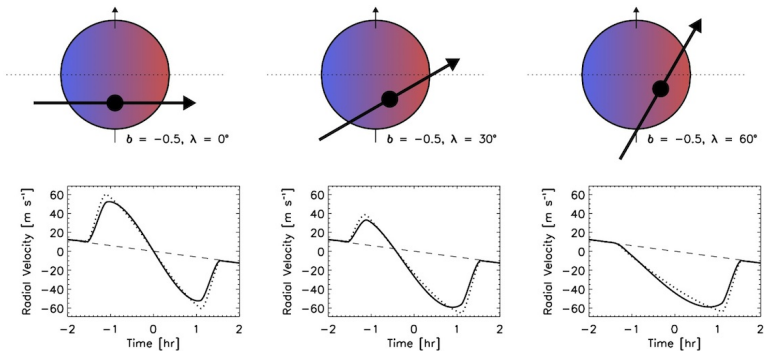


Figure:

<https://wasp-planets.net/tag/rossiter-mclaughlin-effect/>

Our Model - Linear

Planet moves in straight line in front of the star

This path is determined by:

- Projected obliquity
- Impact parameter

This model is not physical

Keplers Equations

Our Model - Physical version

Planet orbits the star.

Keplers equation is solved for input parameters.

The path is determined by:

a , e , i , ω , M_{\star} , M_p , t_p , λ , R_p/R_{\star}
and $v \sin(i)$.

Much more resource heavy, but
also correct

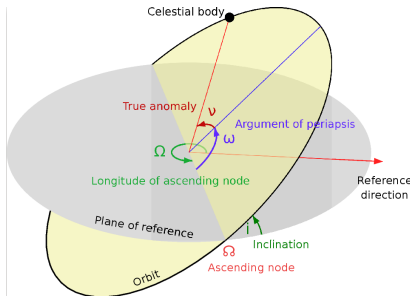


Figure: Credit: Wikipedia user Lassuncty

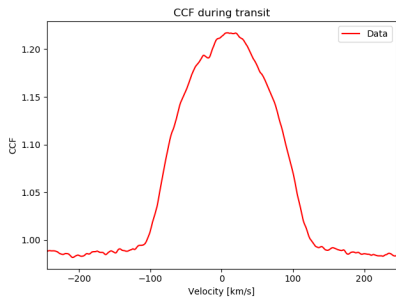
Our Model - Outputs

[Video here]

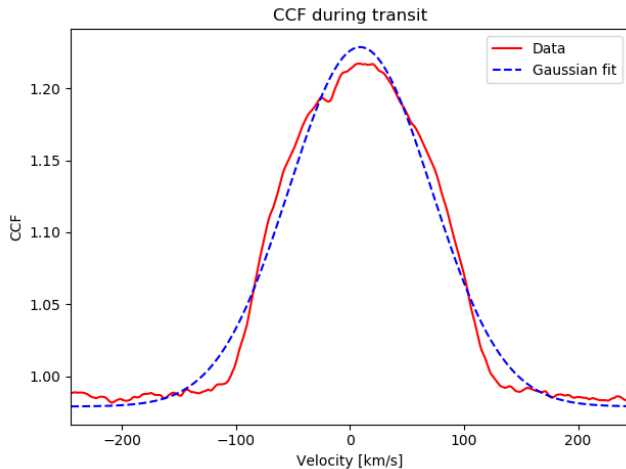
Our Model - Outputs

S her tnker jeg at vi har selve RM-kurven. S vi snakker noget om hvor fucked Gauss fittet er

Data

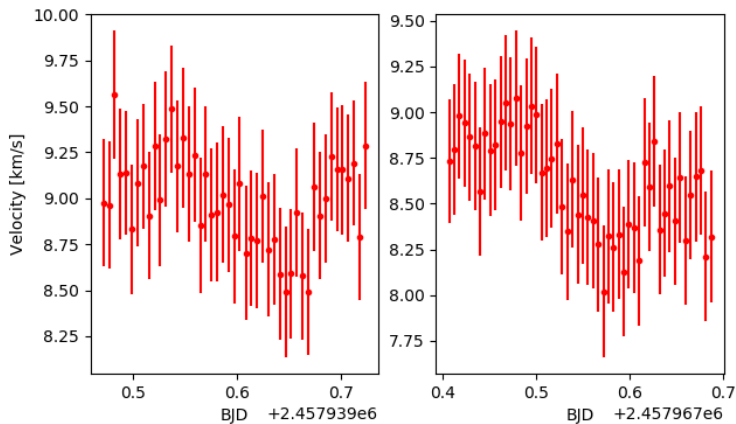


Data - The stellar line

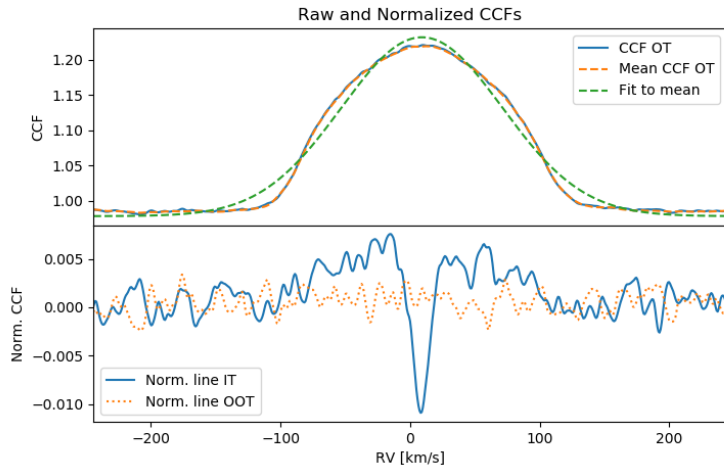


Data - The Transit

CCF centroids

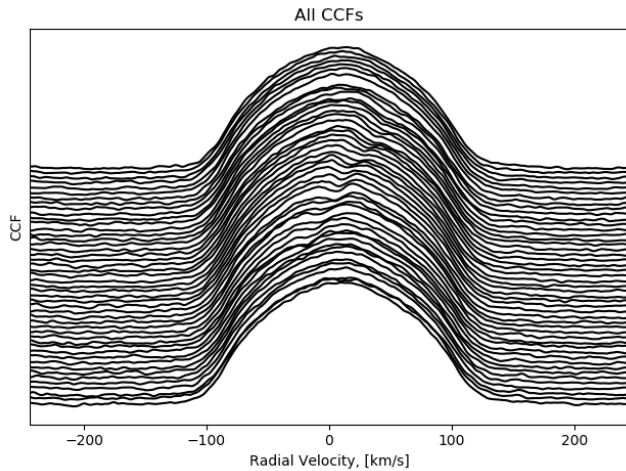


Data - The 'Planet Line'

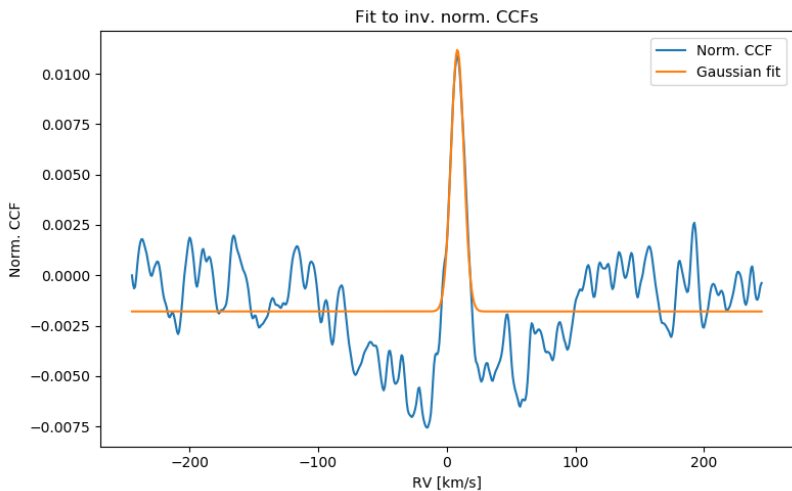


Data - The RM-effect

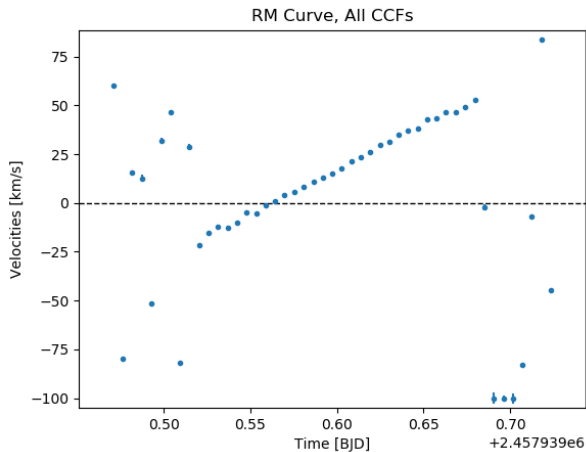
Data



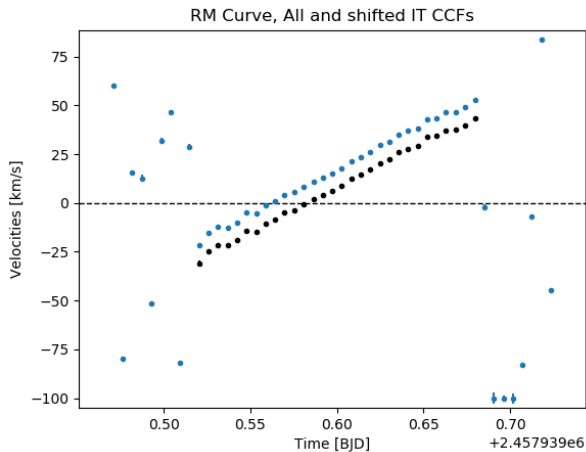
Data - Fit to CCF



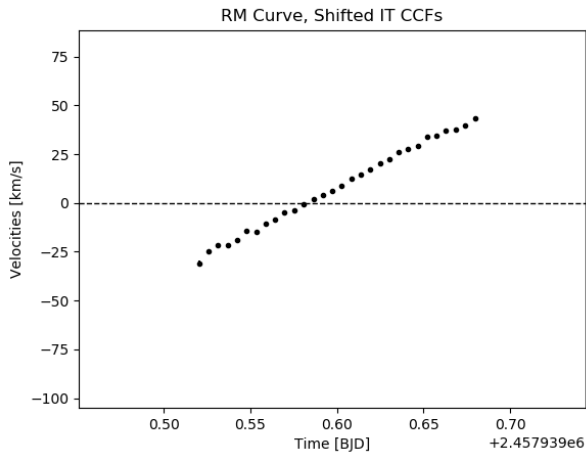
Data - RM curve



Data - RM curve



Data - RM curve



The Fit - System Parameters

Fitting with curvefit

Linear fit